Of precludes, prorating and flood control constraints

Summary for the plenary session

July 27, 2005

"This initial starting point shall be subject to annual review and modification based on data collected and evaluated under the adaptive management program. This assumes a median hydroclimatic conditions in the basin based on system storage, past precipitation, and projections of future precipitation based on historical probabilities…"

Prorating a spring rise

"If the operating year starting on March 1, 2006 is other than a median year, the Corps shall proportionally modify the flow regime either up or down depending on if runoff is projected to be in the upper quartile water year definition or the lower quartile, and within the bounds of health and human safety for the wetter period."

Measures to use to determine when and how much to prorate

- Runoff forecasting
  - The Corps forecasting of runoff for the water year are poor on March 1, but improve significantly by May 1.
- System storage level

Background – Key storage levels

- 57.1 MAF – bottom of flood control pool.
- 54.5 MAF – beginning of navigation reductions
- 36.5 MAF – end of navigation reductions (except preclude)
- 31 MAF – navigation preclude

Potential SR precludes and rationales

- 31 MAF – navigation preclude
- 36.5 MAF – where navigation cuts end (thus below this point, the reservoirs take the greater part of the cost of the SR)
- Other – the Corps examined a range from 31 MAF to 50 MAF

Impact of the Spring Rise Preclude on Minimum System Storage During Droughts

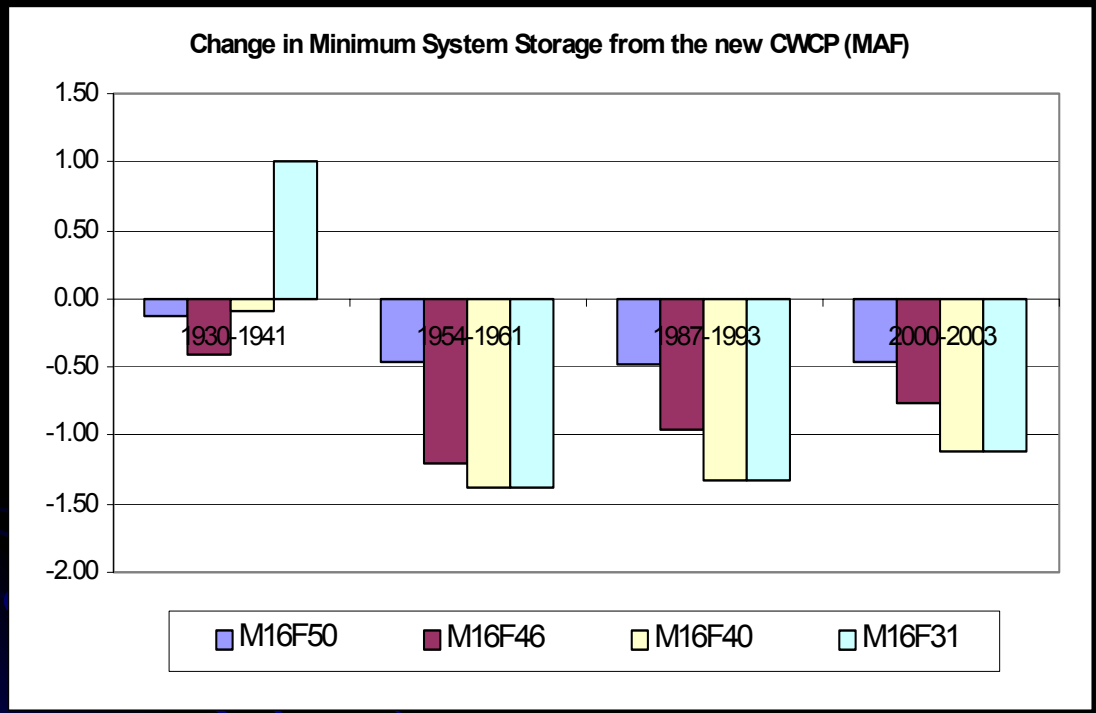
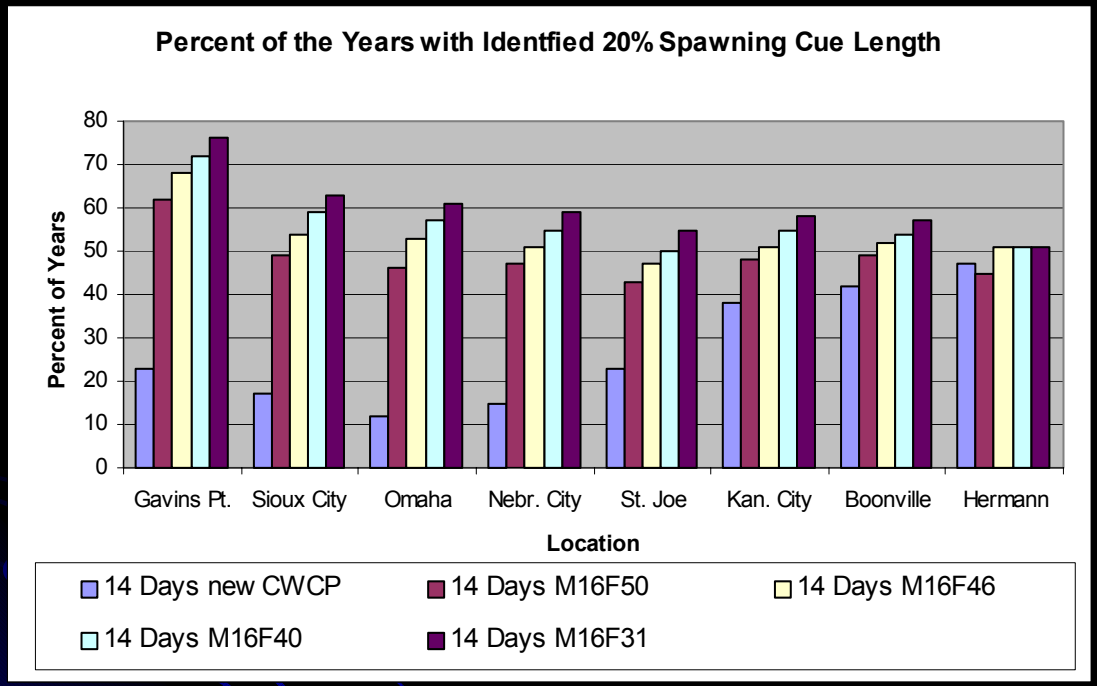


Figure 4

- Comparison is to the current water control plan
- In general, as the spring rise preclude is lowered, system storage during the droughts is lowered due to the ability to run spring rises in more years
- In the 30's drought, the order of non-navigation years changed and an additional non-navigation year was added with the 31 MAF preclude
- In the other 3 droughts, system storage didn't fall below 40 MAF, so the 31 and 40 MAF runs are the same

Impact of the Spring Rise Preclude on Spawning Cue



- Number of years meeting spawning cue criteria increases as the spring rise preclude is reduced
- Maximum difference is 11 percent of years
- All alternatives meet spawning cue criteria more than 40 percent of the years at all locations

Figure 12

Prorating a spring rise

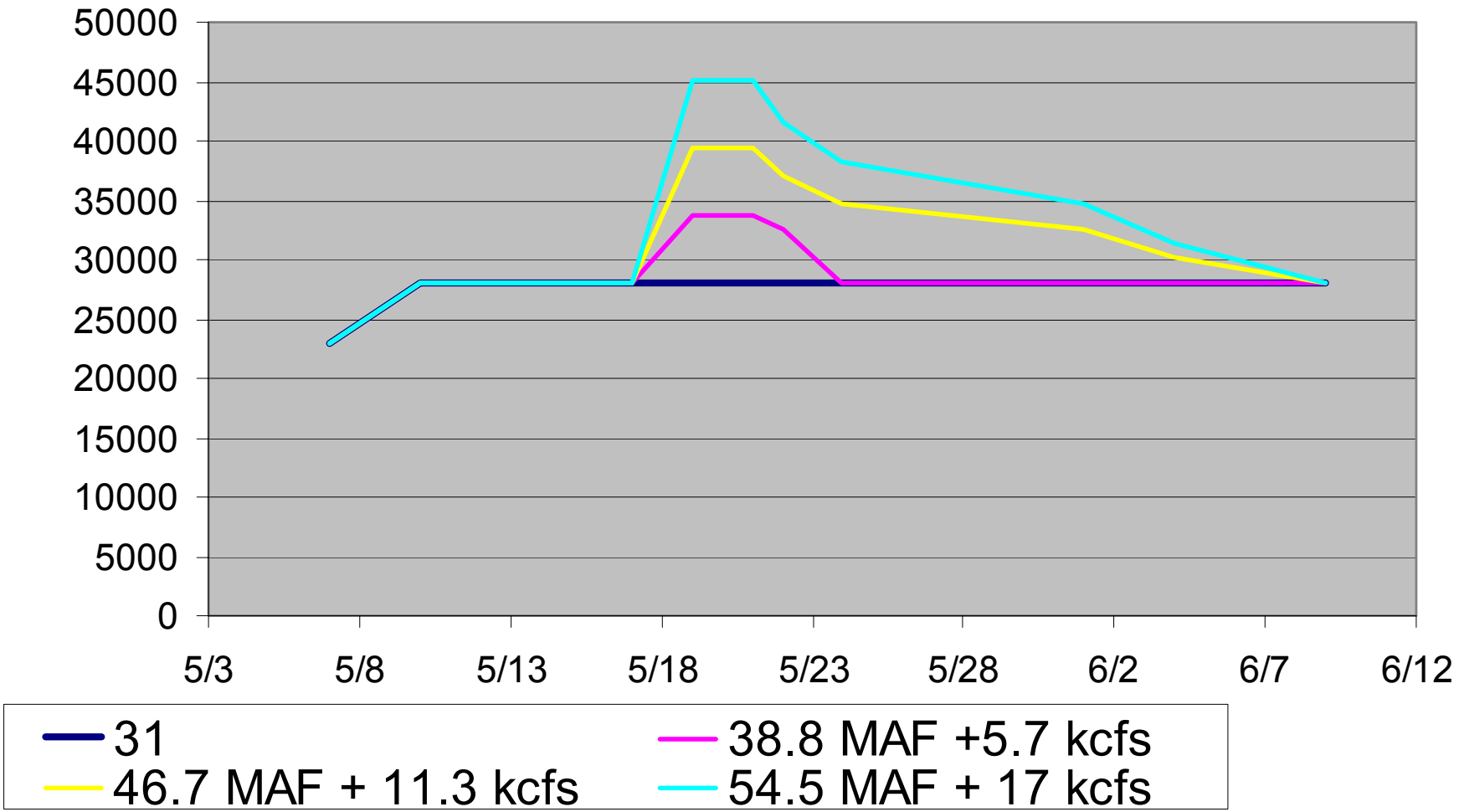
- About 1/3 of the years, are above the 58.5 MAF storage where evacuation will dictate operations. No spring rise (but higher than average flows). (14 of 37 years)
- About 1/3 of the years are “normal”, with a full spring rise. (11 of 37 years)
- About 1/3 of the years are dry, with a prorated spring rise. (12 of 37 years)

Spring-Rise Alternative

e. Second Rise

- No rise when system storage is below 31.0 MAF
- Prorate the rise between 31.0 MAF and 54.5 MAF
- Above 58.5 MAF have no rise

Prorating a spring rise



Flood control constraints - simplified

	Min. service	Full service	**FC constr. (reduce to min. ser.)**	FC cons. less full ser.	FC cons. less min. ser.	FC cons. raised by full 16
Sioux City	25	31				
Omaha	25	31	**46**	15	21	62
Nebraska City	31	37	**57**	20	26	73
Kansas City	35	41	**101**	60	66	117

Impact of Flood Control Constraints on Minimum System Storage During Droughts

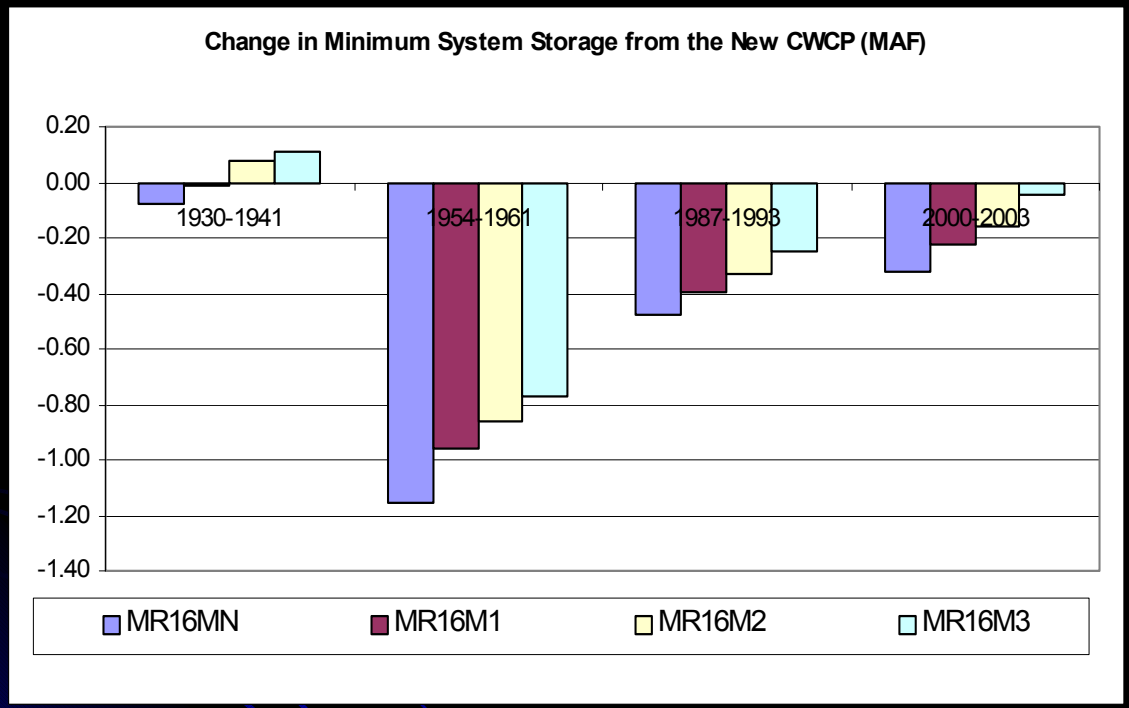


Figure 3

- Comparison is to the current water control plan
- Raising the flood control constraints the full amount of the spring rise uses the most water because it allows the spring rise to be run in many years
- As flood control constraints are reduced, the spring rise gets shuts off more frequently resulting in less water used

Impact of Flood Control Constraints on Spawning Cue

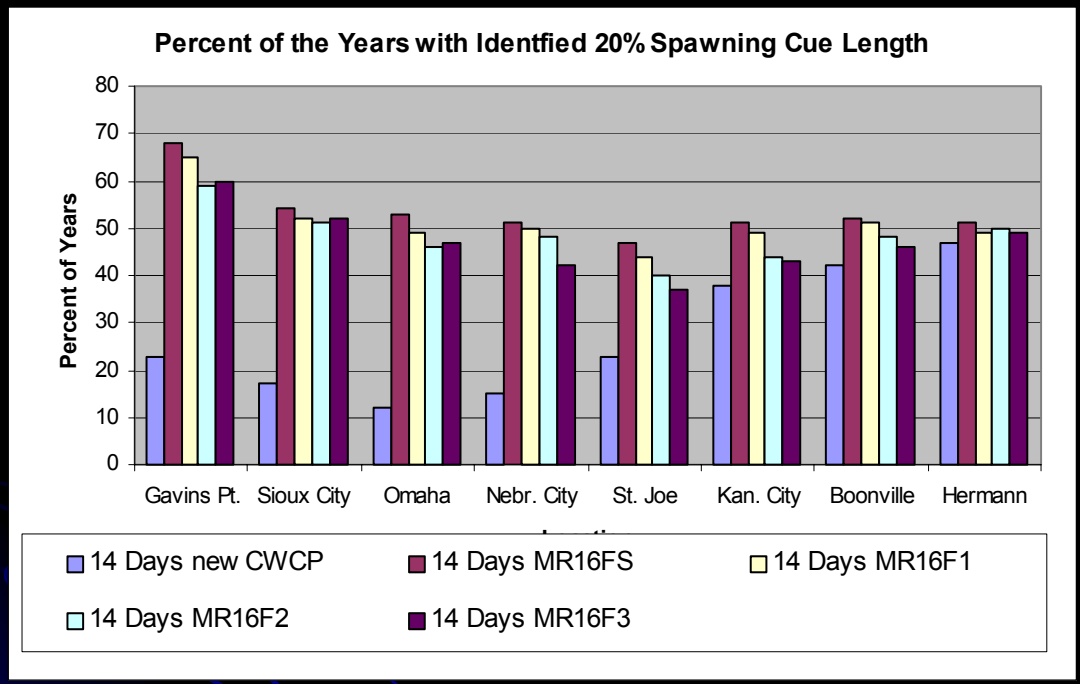


Figure 11

- Number of years meeting spawning cue criteria is generally reduced as flood control constraints become more restrictive
- Difference between alternatives ranges from 2 to 10 percent of years
- All alternatives meet spawning cue criteria more than 35 percent of the years at all locations